Introduction

To science, pilot of industry, conqueror of disease, multiplier of the harvest, explorer of the universe, revealer of nature's laws, eternal guide to truth.

—George Ellery Hale
Inscription in the dome of the Great Hall, U.S. National Academy of Sciences, Washington, DC

Over the past seven years, South Carolinians have worked together to set shared educational goals and academic "world class" standards. This work involved thousands of science educators, school board members, and legislators. From this process emerged the South Carolina Science Curriculum Framework and the Science Academic Achievement Standards, which describe what all students should know and be able to do in science. The present document, *South Carolina Science Curriculum Standards*, is a further refinement in order to bring into sharper focus the kind of education we want in our state. It was approved for first reading by the State Board of Education on November 10, 1999. Second-reading approval by the State Board of Education was accomplished on January 12, 2000. During the summer of 2000, implementation guides will be developed to assist teachers in the interpretation of standards. District and school curriculum and assessment should reflect these standards. Classroom instruction, units of study, and learning experiences should reflect these standards. State-level assessment (using the Palmetto Achievement Challenge Test, known as PACT), instructional materials adoption, and professional development will be based on these standards.

A document will also be developed for parents to explain to them what students should know and be able to do at every grade level. Science content academies during the summer of 2000 and workshops during the fall and winter of 2000–01 will provide technical assistance to teachers in the implementation of the science standards. Additionally, exit exam standards will be identified from these science curriculum standards, along with standards for high school end-of-course tests in science. New instructional materials for science in kindergarten through grade eight will be up for adoption in 2000–01. During the next two years, high school science instructional materials will be adopted. "Building A Presence for the Science Standards," a cooperative effort of the South Carolina Department of Education, the National Science Teachers Association, and the Exxon Corporation, will establish Key Leaders and Points of Contact in each and every school in the State. The thirteen science and mathematics hubs will be available to provide professional development for teachers in the implementation of the standards.

The science curriculum standards are not a scope and sequence or a district curriculum guide. They provide goals and expectations for schools to develop a schoolwide science curriculum and for teachers to develop their own classroom lessons. A science curriculum is the way that science content is organized and presented in the classroom. Teachers' creativity and skills will enable them to find ways to integrate the areas of inquiry, life science, earth science, and physical science into meaningful learning opportunities for all students.

The science curriculum standards in this document were developed from those set forth in the *National Science Education Standards.* The national standards were the result of years of research, discussion, reflection, and review by well over eighteen thousand science educators and scientists. The many individuals who developed the content standards sections of the *National Science Education Standards* used their own interpretations to make independent use of the statements published in *Science for All Americans* and *Benchmarks for Science Literacy* regarding what all students should know and be able to do. The United States has established a goal that all students achieve scientific literacy. The National Science Education Standards are designed to enable us as a nation to achieve that goal. These standards spell out a vision of science education that will make scientific literacy for all a reality in the twenty-first century. They point toward a destination and provide a roadmap for how we are to get there.

All of us have a stake, as individuals and as a society, in scientific literacy. An understanding of science makes it possible for everyone to share in the richness and excitement of comprehending the natural world. Scientific literacy enables people to use scientific principles and processes in making personal decisions and to participate in discussions of scientific issues that affect society. A sound grounding in science strengthens many of the skills that people use every day, such as solving problems creatively, thinking critically, working cooperatively in teams, using technology effectively, and valuing lifelong learning. The economic productivity of our society is tightly linked to the scientific and technological skills of our workforce. The South Carolina Science Curriculum Standards make acquiring scientific knowledge, understanding, and abilities a central aspect of education, just as science has become a central aspect of our society.

The standards apply to all students, regardless of age, gender, cultural or ethnic background, disabilities, aspirations, or interest and motivation in science. Different students will achieve understanding in different ways, and different students will achieve different degrees of depth and breadth of understanding, depending on their interest and ability and the context of the material. All students can develop the knowledge and skills described in the standards, even as some students go well beyond these levels. Students cannot achieve high levels of performance without access to skilled professional teachers, adequate classroom time, a rich variety of learning materials, technology, accommodating work spaces, and the resources of the communities surrounding their schools. Responsibility for providing this support falls on all those involved with the science education system.

The South Carolina Science Curriculum Standards are organized by grade level, beginning with kindergarten. The grade-specific standards are arranged in four major areas:
Area I, Inquiry; Area II, Life Science; Area III, Earth Science; and Area IV, Physical Science.

Bold-faced type indicates text directly from the *National Science Education Standards.* The statements below each national standard represent what students in South Carolina should know and be able to do in order to demonstrate competency in achieving the standard. Major areas of the national science standards that were integrated into each of the areas of Life Science, Earth Science, and Physical Science include History of Science,

Nature of Science, Science in Social and Personal Perspectives, and Technology. The standards for kindergarten through grade eight are organized into units of study.

In the *South Carolina Science Curriculum Standards*, the Revision Team hopes to dispel the myth that science is a specialized activity reserved exclusively for professional scientists and to show that it is instead a part of human intelligence from which everyone can benefit. Thus, science plays a vital role in the way each of us thinks and behaves.